A Comparative Study of a New Variety of *Conus centurio* Born, 1780, from Barbados, West Indies and *Conus recurvus* Broderip, 1833, an East Pacific Cone

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(1 Plate)

INTRODUCTION

Walls' (1978a) attempt to arrange the 309 *Conus* species recognized by Walls (1978b) as valid into supraspecific groupings emphasizes the close relationship of many of the species. Some of the forms, lumped in the same grouping, have overlapping geographic distributions or predictably belong to the same Province, but others are from widely separated areas. Two species, *Conus centurio* and *Conus cf. C. recurvus* (some workers now prefer *emarginatus* to *recurvus*), are placed in adjacent groupings which Walls admits are very close and perhaps should not be separated. The former is an uncommon cone from the Caribbean Province which has been collected from the northern coast of South America along the Central American coast and the Lesser Antilles to Florida. The latter, an uncommon Pacific cone, can be found from the Baja Peninsula south in the Panamic area to Ecuador (Walls, 1978b). Both species typically inhabit moderately deep water. In this connection, recent dredgings (approx. 175m) off the west coast of Barbados, West Indies, have produced two variant specimens of *C. centurio* (herein given the varietal name *antillensis*) which are uniform in shell morphology and colour pattern and are strikingly similar to an atypical specimen of *C. recurvus*. The three forms, *C. centurio* (typical), *C. c.* var. *antillensis* and *C. recurvus* intergrade broadly, with the variant *C. c.* var. *antillensis* serving as the link which suggests a common ancestral form. This possibility appears valid when the assumption is made that the ancestral form predated the Isthmus of Panama, the potential ecological obstacle instrumental in the formation of two daughter species. Further, since both *C. recurvus* and *C. c.* var. *antillensis* inhabit moderately deep water, environmental factors such as temperature, salinity and light are not only fairly stable, but predictably similar—encouraging minimal genetic divergence.

It is the dual purpose of this paper, therefore, to describe *Conus centurio* var. *antillensis* and demonstrate the apparent close relationship between two geographically isolated species, *C. centurio* and *C. recurvus*, specifically by comparing the new variant of the former with an atypical specimen of the latter which most closely resembles *C. c.* var. *antillensis*.

ACKNOWLEDGMENT

I wish to thank Mr. Ole Sørensen for bringing to my attention the similarity in appearance between *Conus centurio* var. *antillensis* and a specimen shell of *C. recurvus* (Panama) from his personal collection. This shell is used herein for comparative purposes. Also, I am indebted to Mr. Jerry Walls for examining the shells and commenting on their similarity for the purpose of this paper. Mr. David Hunt kindly lent some samples of *C. centurio*, which conformed to the traditional descriptions of this species.

DESCRIPTION AND COMPARATIVE DIAGNOSIS

Figures *1* and *2* depict the many anatomical features the shells of *Conus centurio* var. *antillensis* and *C. recurvus* have in common. All three specimens appear adult and the respective lengths of the larger and smaller *C. c.* var. *antillensis* and *C. recurvus* of 5.4cm, 4.9cm and 5.0cm are well within the range given by Walls (1978b) for the two species. Both *C. c.* var. *antillensis* and *C. recurvus* are light, whereas the shells examined for typical *C. centurio* are moderately heavy. In profile, both *C. c.* var. *antillensis* and *C. recurvus* have upper sides slightly convex, tapering to narrow base, and a moderately high spire. By contrast,

typical *C. centurio* is usually low biconical, with straight or slightly concave sides and a low to moderate spire. Other *C. recurvus* examined by the author have sharply pointed spires with whorls slightly stepped. Protoconchs of *C. c.* var. *antillensis* specimens are eroded. Postnuclear whorls are concave for the three specimens as they are for the typical forms. However, the margins of the whorls of the three shells are not carinate as are those of the typical forms examined for both species. In typical *C. centurio*, *C. c.* var. *antillensis* and the *C. recurvus* specimen the earliest two whorls are weakly nodulose, contrasted to the 4-6 strongly nodulose whorls of typical *C. recurvus*. Spiral whorls of all forms of *C. centurio* and *C. recurvus* inspected have axial threads with traces of spiral threads. Regarding the body whorl, a uniformly moderately wide aperture and thin sloping lip also characterize all forms of the two species. Body sculpture is also similar. The anterior third is marked by a dozen or so spiral ridges, above which the surface is smooth except for weak spiral and axial threads. The colour patterns in the specimens shown in Figures *1* and *2* are very close. The body whorl is white, with zigzag variable shades of brown flammules that tend to concentrate in three spiral bands. The central band of *C. recurvus* appears more finely broken, rendering it the only visually apparent distinguishing feature in respect of the two *C. c.* var. *antillensis* specimens. The brown streaks are in continuation with markings of the same colour on the spire whorl. However, the typical form of *C. centurio* tends to have the condensed flammules as irregular blotches overlying distinct and continuous salmon bands, which are not evident in the *antillensis* variant. Also, unlike the specimen shell of *C. recurvus*, the more typical *C. recurvus* is decorated with axial flammules commonly fused vertically.

DISCUSSION

The above comparisons clearly exemplify the problems *Conus* taxonomists encounter in defining species, subspecies and varieties in closely related forms. Vink's (1977) paper on the *Conus cedonulli* complex is further testimony to this problem. A conservative approach has been adopted here in naming the new shells a variant of *Conus centurio*. Differences in shell anatomy between typical *C. centurio* and the two specimens herein described do not warrant naming of a subspecies. The varietal designation may be elevated to the subspecies or species level, but only if further collections enable inspection of the soft parts, radula and operculum. The striking resemblance of *C. c.* var. *antillensis* to an atypical specimen of *C. recurvus* also merits further investigation of the live animals, and it may be that *C. c.* var. *antillensis* deserves taxonomic attachment to the allopatric Pacific species, the Isthmus of Panama notwithstanding. In fact, after personally examining the shells depicted in Figures *1* and *2*, Mr. Jerry Walls communicated the following comment: "I see no obvious differences in shape, texture, sculpture, or pattern from a series of East Pacific *C. recurvus*, not even at what I would call subspecific level; same sloping lip, nodulose early whorls, and virtually absent spiral spire sculpture. I personally see nothing wrong with a species on both sides of Central America, as *Conus puncticulatus* or probably even *Conus cedonulli-archon.*" Two other possibilities are 1) that *C. c.* var. *antillensis* belongs to an existing population of a Caribbean fossil, although I am not sufficiently familiar with the literature on fossil species to comment further on this, or 2) that it is an extreme variant of *Conus villepini*, which I strongly doubt because of distinct differences in texture, length-to-width ratio, spire sculpture, and pattern of body whorl banding.

Literature Cited

Vink, Danker L. N.
1977. The *Conus cedonulli* complex. Zool. Meded. Leiden 51: 79-93
Walls, Jerry G.
1978a. Supraspecific groupings in living cones (Mollusca : Conidae). The Pariah 3: 1-13
1978b. Cone shells: A synopsis of the living Conidae. T. F. H. Publication, Inc., Neptune, N.J.

Explanation of Figures *1* and *2*

Figure *1:* 1 and 3 denote *Conus centurio* var. *antillensis;* 2 denotes an atypical specimen of *Conus recurvus*
Figure *2:* 1 and 2 denote *Conus centurio* var. *antillensis;* 3 denotes *Conus recurvus*